



WATER RESOURCES RESEARCH GRANT PROPOSAL

Project ID: 2004AL24B

Title: Nitrogen Cycling in Alabama Rivers: Effects of Nutrient Addition on the Composition of Functional Microbial Communities

Project Type: Research

Focus Categories: Surface Water, Management and Planning

Keywords: Nitrogen cycle, nitrogen fixation, nitrification, denitrification, riverine systems

Start Date: 03/01/2004

End Date: 02/28/2005

Federal Funds Requested: \$24,806

Non-Federal Matching Funds Requested: \$49,822

Congressional District: 7th

Principal Investigators:

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Abstract

This project will examine two sites in the Upper Watershed of the Cahaba River, one that is relatively pristine and one that is heavily impacted by effluent from a nearby municipal wastewater treatment plant. While macroscopic changes in the vegetation can be readily seen between the sites, almost nothing is known about changes in the microbial communities that are responsible for cycling nitrogen. The researchers propose to examine the overall microbial biodiversity at each site and the bacterial taxa richness of those microorganisms that are capable of carrying out the various processes of nitrogen transformation. If, as predicted, significant differences in the microbial communities are found, this would suggest that water quality is not being maintained and that community shifts are occurring at a process (or functional) level. The methods outlined in this proposal can be utilized as an additional or alternate method to more effectively monitor water quality within Alabama's freshwater ecosystems.